



**Department of  
Environmental Protection  
Bureau of Land & Water Quality - May 2003**

**O&M Newsletter**

A monthly newsletter for wastewater discharge licensees, treatment facility operators,  
and associated persons

## **More on Energy**

As a follow-up to our series of articles on energy efficiency and alternate energy in wastewater treatment facilities, we are reproducing this article, which appeared in the Winter 2003 issue of *Energy Matters*, a newsletter produced by the Department of Energy Office of Industrial Technology.

Often, the resistance by chief financial officers and other upper management executives can be a critical barrier to implementing compressed air or other energy efficiency system improvement projects. The following outline illustrates the kind of information that needs to be presented to management to successfully gain approval for such a project.

Under most circumstances, it would be appropriate to seek project approval by making a formal presentation to key management staff. It would be to the presenter's advantage to have in attendance during the presentation the principal managers of all potentially affected activities. In deciding who should be invited, consideration should be given to impact on budgets as well as on operations. It is most important that all interested parties be fully informed before the meeting, so they can be prepared to participate. If your project gets approved, funding may have to come from other activities; those managers must be fully involved before your presentation, if you are to avoid having them oppose your project.

Besides gaining the cooperation of internal management, it might be wise to gain the support of outside parties, who might lend additional credibility to your proposal. For example, you might want to use a report from an

independent professional or recommendations from your utility or energy services company. For compressed air projects, it would certainly be helpful to make reference to materials produced or endorsed by the Compressed Air Challenge? .

Your presentation to management must be tailored to the scope of the project and the management style of your leadership, and must be keyed to achieving a decision. The best idea is to make the individual in your management scheme that can ultimately approve the project the center focus of your presentation.

Your presentation should present all of the necessary information as concisely as possible. Do not waste valuable time with unimportant details. The more irrelevant details you furnish, the greater the likelihood that someone will start to nit-pick. This may well divert the decision-maker's attention from the true issues at hand.

The following outline suggests a format for presenting your compressed air or energy efficiency project to management.

## **Selling the Project to Management**

### **A. State the purpose of the presentation**

You want everyone attending your presentation to focus on the problem you will present, knowing that a decision will have to be made. If attendees think they are there for an information briefing, they may easily miss some of the points that will critically affect the decision.

**B. State the problem to be corrected**

What are the existing conditions that make it important that the project be considered? What costs are involved that can be reduced? How do existing conditions affect production, staffing, maintenance, and the bottom line?

**C. Describe the scope of the project being proposed**

As briefly as possible and using a minimum of detail describe what the project will consist of in terms of equipment, labor, time and cost to implement. This part of the presentation will help the decision-maker and other key players get a fast understanding of what you want to accomplish and how.

**D. State the benefits to be achieved by implementing the project**

Using simple data summaries and graphical displays, explain how the project will cure the problems you earlier laid out in discussing existing conditions and improvements to the bottom line. Emphasize reducing operating and production costs realizing that one of the most important parameters is the cost per unit of production. In addition to the benefits derived from energy conservation, you should illustrate other benefits, such as pressure stabilization, improving moisture control and air quality, the side benefit of turning off machines that creates additional back-up capacity, and reductions in downtime and reduction of product waste.

**E. Clearly state the cost of implementation**

Accurately state what it will cost to perform the project. You must examine all of the direct costs involved, but also the indirect costs. Will there be additional costs for down time and start-up? Will you need temporary compressed air capability? Will there be

any interruption in production? You must be ready to answer all of these questions.

**F. Explain any effect the project will have on operations**

While this project is going on, will there be any adverse effect on production or other operations? If so, how will it be accommodated? Has the resultant cost of any such impact been included in the estimate of the cost of implementation?

**G. Present the effect on the budget**

Any significant new project will effect the budgeting process. If the project is being sought for the current budget year, the effect is likely to be both large and widespread, having an effect on more than just one part of the business. If the project is for a future budget year, the planning may be simplified, but the effect will always be felt at various activities in the business. Unless a windfall of new revenue exists to fund the project, funding will have to come from existing budget items that will have to be reduced. Advance coordination with the likely targets of these budget transfers can help in getting approval. It may be necessary to clearly demonstrate a long-term benefit to be derived for the overall business to convince a senior manager that he or she can accept a short-term loss of funds to support the project.

Much care should go into analyzing the Return on Investment (ROI), that is, the time over which the savings to be realized by the project equals the cost of implementing it. The shorter the ROI, the more likely the project will be approved. This part of the presentation may be a good time to compare graphically costs against time and present the expected returns to clearly illustrate the ROI. It is also a good time to restate any reduction in cost per unit of production to be realized under the project.

A major barrier to project approval is often a lack of management awareness of real operational costs. Collection/estimation of these costs, and simple graphical displays in your presentation can help highlight the need for the project.

## **H. Provide a coordinated implementing plan**

The best plan, implemented poorly, can be a total failure. Coordination between and among departments, realistic work schedules, accommodation for the unexpected, clearly stated, achievable milestones, and the assignment of a fully accountable project manager are essential to making the project a success. “What if” brainstorming should always be included in the planning. Under best conditions all of the affected activities should be in agreement on the plan before the decision briefing is presented. If such agreement is not possible in advance, the plan should include an early milestone related to achieving that level of agreed-to coordination. The timing for the project and each of the milestones are critical to the decision process. The latest date a decision can be useful must be made clear. Normally, this time estimate should allow management some time to consider options and alternatives. However, it must be made clear that the reason the project is being sought is because a decision is needed, and when it is needed.

## **I. Summarize the project and ask for the decision**

Close the sale. Summarize the need for the project and timing, review the cost/benefit analysis, lead the thought process to conclude the need for a decision, and ask that the decision be made.

Provide a minimum of complicated details in the briefing itself. It is a good idea to have handy as much hard data detail as possible, in case it is requested. Spread sheets and reports, process studies, cost data and analysis are all valuable back up to your presentation. However, avoid using these materials in the presentation itself to avoid confusion. Any data that you provide should be in a prepared format, and it should not be cluttered with ancillary, irrelevant data that may mislead or divert thinking. You should always remember that the two most critical parameters in play during your presentation are time and focus. Time is critical because the longer it takes to “make your case”; the less likely you are to get the decision you want. Focus is important because you do not want the decision-maker to be distracted from the very specific goal of implementing your project.

The most important factor in gaining the approval you seek is in coordinating in advance with all of the affected managers and key players within your organization. If you can get them to approve the concept informally in advance of your presentation to senior management, a favorable decision will be much more easily achieved. In most cases, it will be very difficult to get unanimous coordinated approval from all the players. And remember that because of the competition for funding, one or more of the key players will suffer some form of budget impact.

## **Certification News**

Not to beat the dead horse, but... operators who renewed their certifications in March should have received their notification of renewal letters by now. If you have an *odd* certificate number and you mailed your renewal form and check in and have not received a renewal confirmation and pocket certificate renewal card, please contact us as soon as possible. Any of you who were due for renewal but didn't file with us should have received a letter stating that your certificate was now inactive. If you paid your fee but were short on training hours, you should have received a letter to that effect. If you have an odd numbered certificate and you haven't heard from us, let us know immediately.

## Spring Exam

By the time you read this, the Spring 2003 Operator Certification Exam will have been given and the tests will be at ABC for correction. As usual, we'll get the results out to you as soon as possible after we receive them. Good luck to all that took the test!

## Approved Training

May 21&22, 2003 in Bangor, ME, - Basic Lab Procedures w/ NEWEA Exam - Sponsored by NEIWPCC, (978) 323-7929 – Approved for 10 hours.

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May 20, 2003 in Houlton, ME – Excavation: Competent Person Training - Sponsored by MRWA (207) 729-6569 – Approved for 6 hours.

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December 2&3, 2003 in Freeport, ME - MRWA Annual Conference – Sponsored by MWRA, (207) 729-6569 – Approved for TBA hours.

## For Practice

1. The purpose of an air-gap device is to:
  - a. Put more oxygen in the waste in sewers to avoid odors
  - b. Lessen vibration in pipes.
  - c. Prevent cross connections between wastewater and potable water.
  - d. Ventilate wet wells at pump stations
2. A BOD test was run using three dilutions of the same sample. Which dilution gives the most valid results?

	Sample Volume	Initial DO	Final DO	BOD
a.	3 mL	8.0 mg/L	6.7 mg/L	130 mg/L
b.	5 mL	7.9 mg/L	4.0 mg/L	234 mg/L
c.	8 mL	8.1 mg/L	0.9 mg/L	270 mg/L

3. If the return sludge rate increases and the influent flow and BOD concentration remain constant, the F/M ratio in the aeration basin will most likely...
  - a. Remain the same
  - b. Increase
  - c. Decrease
  - d. Depend on the air temperature
4. If an operator has a stock solution of acid that is 10N and he mixes 20 mL of that acid with 980 mL of distilled water, what will the normality of the resulting solution be?
  - a. 0.8N
  - b. 0.2N
  - c. 8.0N
  - d. 2.0N

## Answers to For Practice:

1. c. An air-gap is the only acceptable method to prevent cross-connections between wastewater and potable water.
2. b. In sample A, the depletion of DO in the sample bottle is less than 2.0 mg/L indicating that there was not enough biological activity for a valid test. In sample C, the DO was depleted to less than 1.0 mg/L. There might not have been enough DO available to complete the biological reduction of the organic material in the wastewater.
3. c. The F/M ratio is the ratio of the pounds of food to the pounds of microorganisms. If the flow and BOD concentration coming into the plant remain constant the plant will receive a constant amount of BOD. If the return sludge rate increases, there will be more sludge for the same amount of food. Thus, the F/M ratio decreases
4. b. The normality of the final solution is given by (Volume of Acid X Normality of Acid)/Total Volume

$$\text{Normality of Solution} = (20 \text{ mL} \times 10\text{N}) / (20\text{mL} + 980\text{mL}) = 0.2\text{N}$$

## **Reporting Requirements**

### **Twenty-four Hour Reporting**

According to the Maine Pollutant Discharge Elimination System Permit Standard Conditions, the permittee shall report to the Department any noncompliance which may endanger health or the environment. The permittee must notify the Department verbally within 24 hours and in writing within five days of becoming aware of the circumstances. Written submissions shall include a description of the noncompliance and its cause, the period of noncompliance, the anticipated time the noncompliance will be corrected (if the noncompliance is continuing), and the steps taken to or planned to reduce, eliminate, and prevent recurrence of the noncompliance. Pump station bypasses, chlorination malfunctions, and sewer line breaks/overflows are examples of incidents that may endanger health or the environment.

In addition, the following events must also be reported to the Department within 24 hours of becoming aware of the circumstances:

- 1) Any unanticipated bypass which exceeds any effluent limitation in the permit;
- 2) Any upset which exceeds any effluent limitation in the permit; and,
- 3) Any violation of a daily maximum limit for any pollutant listed in the permit.

Reporting of noncompliance is an essential part of operating a wastewater treatment plant and complying with the waste discharge license/permit. In some instances, Department staff may be able to provide prompt technical assistance to aid in correcting the problem and in preventing recurrences. In the event of an enforcement action, the Department does consider failure to report as a violation for which monetary penalties may be appropriate, depending on the circumstances and the number and frequency of reporting failures.

Remember, when in doubt, report it!

***John Glowa***

# BOD & METABOLISM / DENITRIFICATION

**Friday June 27, 2003, 8:30 AM – 4:00 PM**

**Registration 8:00 – 8:30 AM**

**DES Auditorium, Concord, NH**

**BOD & Metabolism** This 3-hour session reviews the different types of BOD that enter the activated sludge process. The removal, degradation, transformation and loss of BOD are discussed. The degradation of BOD to non-polluting wastes and less polluting wastes and transformation of BOD (sludge production) are reviewed through aerobic, anoxic, and anaerobic respiration. The production of malodors through anaerobic respiration is presented. Operational measures for monitoring BOD degradation and sludge production as well as process control measures to reduce sludge production are presented.

**Denitrification** This 3-hour session reviews the biological principles of denitrification and their application for process control, troubleshooting, permit compliance, and cost-effective operation. Operational conditions affecting denitrification will be presented. This session will focus upon the benefits of desired denitrification and the unfortunate consequences of undesired denitrification. Topics include the sources of nitrite and nitrate ions, the anoxic environment, comparison of aerobic and anoxic respiration, monitoring denitrification, and controlling undesired denitrification.

**Instructor** Michael H. Gerardi, M.S., biology, is responsible for the development and presentation of wastewater biology courses for Penn State University.

**Sponsor** New Hampshire Water Pollution Control Association. Call 271-2940 for more info.

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## BOD & METABOLISM / DENITRIFICATION Registration deadline is June 13, 2003

COST: ? \$60 per registrant / NHWPCA members  
? \$85 per registrant / non members

Name \_\_\_\_\_

Facility or firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Phone \_\_\_\_\_

? Payment enclosed or P.O. # \_\_\_\_\_

**MAKE CHECK PAYABLE TO: NHWPCA**

**Mail completed registration with payment or P.O. # to:**  
**Brian Hilliard, NHWPCA**  
**P.O. Box 95, Concord, NH 03302-0095**